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EXAMINER
QUINONES, EDEL H

ART UNIT	PAPER NUMBER
2131	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Application No.
09/476,612

Applicant(s)
DIAMANT, NIMROD

Examiner
Edel H Quinones

Art Unit
2131

Office Action Summary

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 January 2004_.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under _Ex parte Quayle_, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-25_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendment

1. This Office Action is responsive to the amendment filed on January 30, 2004.

Response to Arguments

2. Applicants arguments with respect to claims 1, 8, 15 and 21 have been fully considered

by they are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amdahl et al.

(U.S. Patent 6,253,334 and Amdahl hereinafter) in view of Anand et al. (U.S. Patent 6,141,705

and Anand hereinafter).

In regards to claims 1 and 8, Amdahl teaches a system utilizing a team of network

interfaces operating in adapter fault tolerance mode (i.e. an apparatus for transferring data

between at least one transport protocol stack and a plurality of network adapters coupled to a

computer network that supports recovery from network adapter and computer failure) (see

Abstract), comprising:

receiving data for processing by said team (i.e. traffic outbound from the server to the

network segment is directed through some or all NICs in the group according to some algorithm

which may vary from one embodiment to another) (col. 5, lines 1-3), said team having a primary

network interface and at least one secondary network interface (i.e. the primary NIC is specified

first, followed by one or more secondary NICs) (col. 9, lines 10-11);

and based on some condition either processing and transmitting said data by the primary

network interface; or

distributing processing of said data across said secondary network interfaces (i.e. data

packet 104 can be sent to the LSL 112 with information to route it through the primary driver

120 to a NIC 124. However, in order to distribute the load, the MULTISPAN prescan module

110 intercepts the packet 104 and alters its destination so that it flows through the secondary

driver module 122 to the NIC 126 and out to the network backbone 12.) (col. 8, lines 8-14).

In other words, Amdahl teaches that the MULTISPAN module decides whether to

process and transmit a data packet through a primary NIC or to through a secondary NIC based

on information appended to the data packet.

The system of Amdahl does not teach that it provides primary and secondary use

processing of data; that if the data is for primary use processing, then the data is processed and

transmitted by the primary NIC; and that if the data is for secondary use processing, the

processing of the data is distributed across the secondary NICs.

Anand teaches an invention useful in connection with the offloading of tasks to network

interface card (NIC) peripheral devices, which can often perform many of the tasks otherwise

performed by the computer CPU in software (col. 3, lines 5-8).

Anand teaches secondary use processing of data (i.e. rather than perform certain of the CPU intensive operations on the data packet as it passes through the respective network layers-- e.g. checksum calculation/verification, encryption/decryption, message digest calculation and TCP segmentation--those tasks can instead be offloaded and performed at the NIC hardware) (col. 3, lines 39-44)

Anand also teaches how to differentiate between primary and secondary data (i.e. the CPU can offload tasks to peripheral devices by merely appending the requisite packet extension to the data packets) (col. 12, lines 46-49). It can be inferred that only the secondary data (i.e. data to be offloaded) contains the requisite package extension. Therefore, data without the requisite package extension can be considered as primary data, and can be differentiated from the secondary data.

Therefore it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the system of Amdahl with the teachings of Anand to include primary and secondary use processing of data; and processing of the data either on a primary NIC or a secondary NIC based on whether the data was tagged for primary use or secondary use with the motivation of increasing the efficiency, speed and throughput of the overall system (Anand see column 2, lines 51-52).

In regards to Claims 2 and 9, Amdahl teaches further comprising:

loading a driver (i.e. MULTISPAN) for the team of network interfaces, said driver configuring said team to operate in adapter fault tolerance mode (i.e. fault detection and recovery is accomplished by "MULTISPAN", a process operating within the system) (col. 4, lines 8-9)

and designating the primary network interface and the at least one secondary network

interface (i.e. after loading the MULTISPAN.NLM module, the user can configure the system to

load drivers for both the primary NIC and one or more secondary NICs using the INETCFG

command or by manually editing AUTOEXEC.NCF or manually loading drivers at the system

console) (see Column 8, Lines 32- 36);

wherein said distributing processing is according to a workload of said secondary

network interfaces (i.e. the system selects a NIC to send out packets from the plurality of NICs

according to an algorithm specific to one embodiment of the invention. Some embodiments of

the invention will choose a NIC that is less loaded than at least one other NIC in the plurality of

NICs) (see Column 15, Lines 48- 53).

In regards to claims 3 and 10, Amdahl teaches where if said primary network interface

has available processing bandwidth, then distributing processing of said data across all network

interfaces of said team (i.e. when load sharing is enabled, packets are sent out from all available

NICs. That is, if the primary NIC has available bandwidth, then it is also used to send out

packets.) (col. 11, lines 41-42)

In regards to Claims 4 and 11, Amdahl teaches wherein said distributing processing is

according to a workload of each of said team of network interfaces (i.e. i.e. the system selects a

NIC to send out packets from the plurality of NICs according to an algorithm specific to one

embodiment of the invention. Some embodiments of the invention will choose a NIC that is less

loaded than at least one other NIC in the plurality of NICs) (see Column 15, Lines 48- 53).

In regards to claims 5 and 12, Amdahl teaches wherein processing said data includes encrypting said data according to IPSEC (i.e. outgoing packets are subject to packet processing that includes performing any encryption or compression on the payload including the source and destination address, and wrapping the payload with a header including a destination MAC address) (See Column 22, Lines 33-39). It is understood that IPSEC encryption is included in the realm of "any encryption".

In regards to claims 6 and 13, the combination of Amdahl and Anand teaches the system of claims 1 and 8 as discussed above.

The combination of Amdahl and Anand does not teach receiving data for secondary use processing from an operating system.

Anand teaches that the Operating System can request that a peripheral perform the previously enabled task, or tasks, in a dynamic, as-needed bases, depending of the then current processing needs of the computer system (col. 3, lines 20-23).

Therefore it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to further modify the system of Amdahl with the teachings of Anand to include receiving data for secondary use processing from an operating system with the motivation of increasing the efficiency, speed and throughput of the overall system (Anand see column 2, lines 51-52).

In regards to claims 7 and 14, the combination of Amdahl and Anand teaches the system of claims 1 and 8 as discussed above.

The combination of Amdahl and Anand does not teach receiving data for secondary use processing from an application programming interface (API) configured to submit data for secondary use processing by said team.

Anand teaches that for every external function that a NIC driver needs to perform, from registering and intercepting NIC hardware interrupts to communicating with transport protocol drivers to communicating with an underlying NIC via register manipulation and port I/O, it can rely on NDIS APIs to perform the function (col. 8, lines 57-60). The Examiner interprets "receiving data for secondary use" as one of the external functions that a NIC driver needs to perform.

Therefore it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to further modify the system of Amdahl with the teachings of Anand to include receiving data for secondary use processing from an API (i.e. NDIS API) configured to submit data for secondary use processing by said team with the motivation of increasing the efficiency, speed and throughput of the overall system (Anand see column 2, lines 51-52).

2.   Claims 15-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amdahl in view of Anand in further view of Cajolet (U.S. Patent 6,192,388).

In regards to claims 15 and 21, the combination of Amdahl and Anand teaches a system for utilizing a team of network interfaces operating in adaptive load balancing mode (i.e. a system that provides load balancing and fault tolerance capabilities) (see Amdahl, col. 1, lines

46-47) to provide primary and secondary use processing of data (i.e. offloading tasks to NICs) (see discussion for claims 1 and 8 above) .:

The combination does not teach identifying active and failed NICs; and either distributing processing data across active NICs if the data is primary use processing, or distributing processing across all active and failed NICs if the data is secondary use processing.

Cajolet discloses a system that relates to distributed processing. Cajolet teaches that when a computer has been inactive for a preset amount of time (figure 6, #94), the computer can be used to assist other computer in performing part of a complex task (col. 2, lines 41-46). If the computer is capable of performing part of the complex task (figure 6, #104), it can be used to participate in the distributed processing task while the computer is in the inactive state (figure 6, #114). In other words, Cajolet teaches that one can borrow processing power from computers that are not occupied performing their expected functions, that is, that are in an inactive or dormant state. This is analogous to borrowing processing power from NICs which are not occupied in the transmission of network traffic, that is, that are in a failed state.

Therefore it would have been obvious to apply the teachings of Cajolet to the combination of Amdahl and Anand to include identifying active and failed NICs, and to use all active and failed NICs for the processing of secondary use data while using only the active NICs for the processing of primary data with the motivation to leverage all resources available for performing secondary use processing and thus improve the efficiency of the system.

In regards to claims 16 and 22, Amdahl teaches:

loading a driver (i.e. MULTISPAN) for said team, said driver configuring said team to operate in the adaptive load balancing mode (i.e. sharing traffic load among all NICs in a group) (col. 4, lines 60-61) and appear to be a single network interface (i.e. the inventions identifies one NIC, called the primary, by which the entire group is identified) (col. 4, lines 35-37).

In regards to claims 17 and 23, Amdahl teaches:

receiving, by a first one of said of network interfaces, a portion of said received data for processing;

identifying a processing mode (i.e. load balancing or fault tolerance) required for processing said portion;

determining if said first one supports the processing mode; and

if not, then submitting processing of said portion to a second one of said team network interfaces (see Amdahl col. 8, lines 1 –21).

In regards to claims 18 and 24, Amdahl teaches:

receiving data for secondary use processing from an operating system (i.e. Novell NetWare) (col. 8, line 3).

In regards to claims 19 and 25, the combination of Amdahl, Anand and Cajolet teaches the system of claims 15 and 21 as discussed above.

The combination of Amdahl, Anand and Cajolet does not teach an application

programming interface configured to submit data for secondary use processing by said team.

Anand teaches an application programming interface configured to submit data for

secondary use processing by said team (i.e. communication with NICs is done via NDIS APIs)

(col. 8, lines 57-62).

Therefore it would have been obvious to modify the combination of Amdahl, Anand and

Cajolet with the teachings of Anand to include an application programming interface configured

to submit data for secondary use processing by said team with the motivation to leverage all

resources available for performing secondary use processing and thus improve the efficiency of

the system

In regards to claim 20, Amdahl teaches:

installing said team of network interfaces in a computing device having an operating

system(i.e. Novell NetWare) (col. 8, line 3).

Amdahl does not teach receiving data for secondary use processing from an application

programming interface configured to submit data for secondary use processing by said team.

Anand teaches receiving data for secondary use processing from an application

programming interface configured to submit data for secondary use processing by said team (i.e.

communication with NICs is done via NDIS APIs) (col. 8, lines 57-62).

Therefore it would have been obvious to modify the combination of Amdahl, Anand and

Cajolet with the teachings of Anand to include receiving data for secondary use processing from

an application programming interface configured to submit data for secondary use processing by

said team with the motivation to leverage all resources available for performing secondary use

processing and thus improve the efficiency of the system.

Other Prior Art Made of Record

3.   A.   Mahalingam et al. (U.S. Patent No. 6,208,616) discloses a system for detecting

errors in a network;

        B.   Vepa et al. (US Patent No. 6,490,632) discloses High performance load balancing

and fail over support of internet protocol exchange traffic over multiple network interface cards;

and

        C.   Connery et al. (US Patent No. 5,937,169) discloses offloading of TCP

segmentation to a smart adapter.
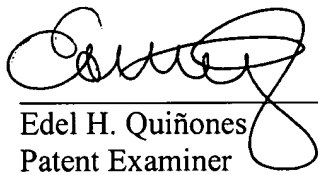
Conclusion

4.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Points of Contact

5.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Edel H. Quiñones whose telephone number is 703-305-8745.

The examiner can normally be reached on M-F (8:00AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ayaz Sheik can be reached on 703-305-9648. The fax phone number for the

organization where this application or proceeding is assigned is 703-305-3718.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-305-3900.

Edel H. Quiñones
Patent Examiner
Technology Center 2100

February 20, 2004

AYAZ SHEIKH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100